What is claimed is:

1. An apparatus kit for demonstrating Archimedes' principle, the kit comprising:

a tub for holding fluid, wherein said tub has sides, and further has an overflow spout, such that when a fluid level reaches said overflow spout, all additional fluid added to the tub will flow out of the overflow spout; and,

a stable boat sized to float in said tub without touching the sides of said tub.

2. The kit of claim 1 further comprising weights which are sized to fit in the boat without sinking the boat.

3. An apparatus kit for demonstrating Archimedes' principle, the kit comprising:

a tub for holding fluid, wherein said tub has sides and wherein said sides have a top edge, and further has an overflow spout, such that when a fluid level reaches said overflow spout, all additional fluid added to the tub will flow out of the overflow spout; and,

a balance beam which can balance on a top edge of said tub sides, wherein said balance beam comprises a first end and a second end, wherein said first end has a first means for attaching a counter weight, and said second end has a second means for attaching a sample weight such that the sample weight attached to said second end will be submerged in the fluid in said tub when the balance beam is balancing on the top edge of said tub sides.

4. The kit of claim 3 wherein said means for attaching counter weight to said first end comprises a tray hanging from a groove in said first end.

5. The kit of claim 3 wherein said balance beam further comprises an adjustment means, for adjusting the center of gravity of said balance beam, to allow the balance beam to be balanced on the edge of said tub.

6. The kit of claim 5 wherein said adjustment means is an adjustment screw on the beam second end, which can be turned in or out.

7. The kit of claim 3 which further comprises one or more sample weights of simple geometric shape, which can be attached to the beam second end.

8. The kit of claim 3 wherein said tub further comprises a fulcrum for balancing said balance beam.

9. An apparatus kit for demonstrating Archimedes' principle, the kit comprising:

a tub for holding fluid, wherein said tub has sides and wherein said sides have a top edge, and wherein said tub further has an overflow spout, such that when a fluid level reaches said overflow spout, all additional fluid added to the tub will flow out of the overflow spout;

a stable boat sized to float in said tub without touching the sides of said tub; and,

a balance beam which can balance on a top edge of said tub sides, wherein said balance beam comprises a first end and a second end, wherein said first end has a first means for attaching weight, and said second end has a second means for attaching weight such that the weight attached to said second end will be submerged in the fluid in said tub when the balance beam is balancing on the top edge of said tub sides.

10. The kit of claim 9 further comprising weights which are sized to fit in the boat without sinking the boat.

11. The kit of claim 9 wherein said first means for attaching counter weight to said first end comprises a tray hanging from a groove in said first end.

12. The kit of claim 9 wherein said beam further comprises an adjustment means, for adjusting the center of gravity of said beam, to allow the beam to be balanced on the top edge of said tub sides.

13. The kit of claim 12 wherein said adjustment means is an adjustment screw on the beam second end, which can be turned in or out.

14. The kit of claim 9 which further comprises one or more sample weights of simple geometric shape, which can be attached to the beam second end.

15. The kit of claim 9 wherein said top edge of said tub sides further comprises a fulcrum for balancing said balance beam.

16. A method for demonstrating Archimedes' principle showing buoyancy for a floating object, the steps comprising:

filling a tub with a fluid to the point of overflow, wherein said tub has sides, and further has an overflow spout, such that when a fluid level reaches said overflow spout, all additional fluid added to the tub will flow out of the overflow spout and will be designated as overflow fluid;

placing an overflow catcher under said overflow spout to catch all overflow fluid;

placing a boat in said tub, wherein said boat is a stable boat, sized to float in said tub without touching the sides of said tub;

placing weights into said boat, wherein the weights are not enough to make the boat sink;

weighing the overflow fluid which has flowed into the overflow catcher; and,

comparing the weight of the overflow fluid to the combined weight of the boat plus the weights placed in the boat.

17. A method for demonstrating Archimedes' principle showing buoyancy for an object which does not float, the steps comprising:

filling a tub with a fluid to the point of overflow, wherein said tub has sides and wherein said sides have a top edge, and wherein said tub further has an overflow spout, such that when a fluid level reaches said overflow spout, all

additional fluid added to the tub will flow out of the overflow spout and will be designated as overflow fluid;

placing an overflow catcher under said overflow spout to catch all overflow fluid;

placing a sample weight into the fluid;

weighing the overflow fluid which has flowed into the overflow catcher;

balancing a balance beam on an edge of said tub, wherein said balance beam comprises a first end and a second end, wherein said first end has a first means for attaching a counter weight, and said second end has a second means for attaching a sample weight such that the sample weight attached to said second end will be submerged in the fluid in said tub when the balance beam is balancing on the top edge of said tub sides;

attach said sample weight to said beam second end;

attaching a counter weight or weights to said beam first end, until the beam is again balanced on the top edge of the tub side;

weighing said counter weights; and,

comparing the weight of the sample weight to the combined weight of the overflow fluid plus the weight of the counter weights.